



Boundary Tributary Non-Native Fish Suppression

Sullivan Creek Watershed



Seattle City Light



Welcome & Introductions

Organizations and Roles

- Seattle City Light
 - Licensee for the operation of Boundary Dam
- Kalispel Tribe Natural Resources Department
 - Implementation of non-native fish suppression and eradication projects
- Washington Department of Fish and Wildlife
 - State fish and wildlife management; implementation of non-native fish eradication projects
- Washington State University
 - Public information and facilitated outreach

Process and Background

Boundary Dam Hydroelectric Relicensing Process



2007 - 2010 Meetings, public input and negotiation

2010 Settlement Agreement signed

2013 License issued → covers operations through 2055

- Fish & Aquatics Management Plan/ Tributaries Management Plan

June 2016 Initial Public Meeting

- **Non-native fish suppression**

Summer 2016 non-native fish suppression begins

Fall 2016 –Spring 2017 Public Meeting series continues

- Non-native fish eradication

Fall 2017 Non-native fish eradication begins

2017 → Ongoing information, outreach and management

Project Context

- Settlement Agreement negotiated from 2007-2010
 - Establishes Licensee's obligations for protection, mitigation, and enhancement of resources affected by the project
 - Signed in 2010 (12 signatories)
- 42 year license issued in 2013
- Settlement Agreement adopted license articles:
 - Terrestrial, Cultural, Recreational, Fish and Aquatics
- Fish and Aquatics Management Plan:
 - Identifies fisheries measures to be implemented
- Tributary Management Plan:
 - Roadmap for implementing measures in tributaries to Boundary Reservoir

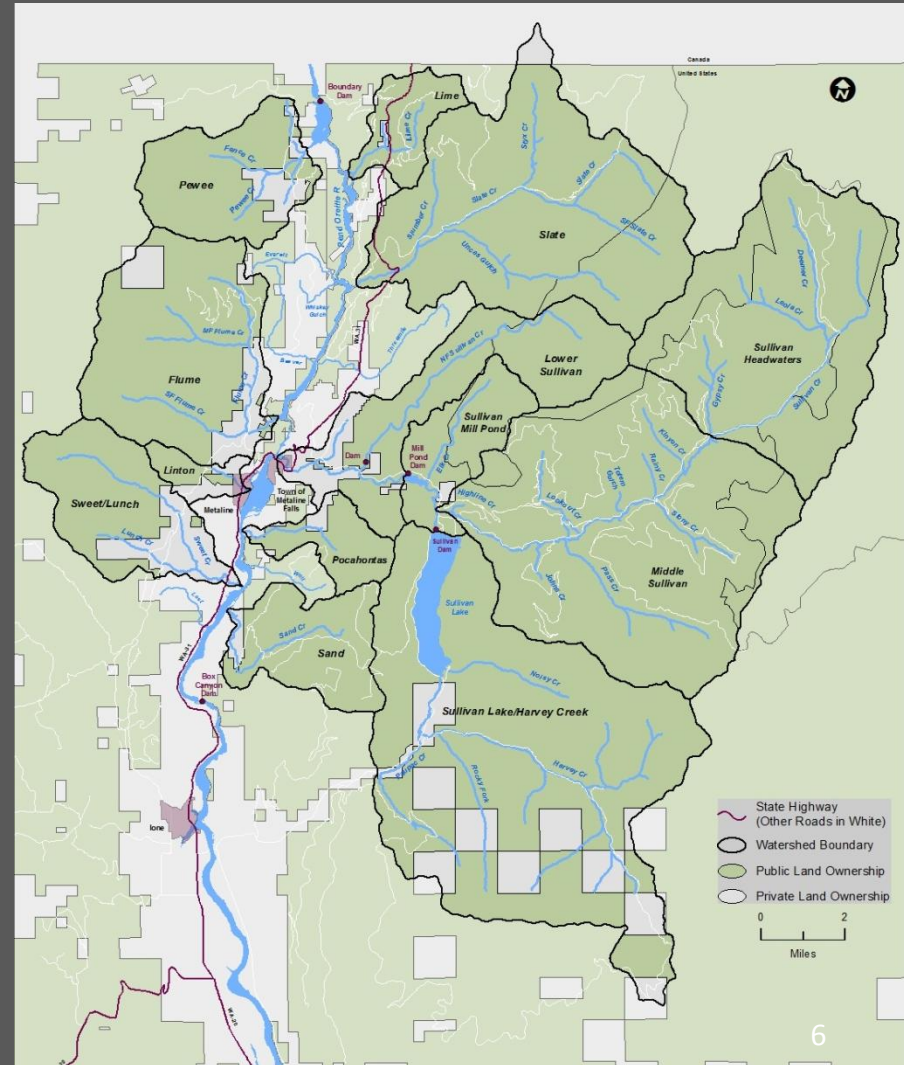
Goals and Objectives for Boundary Tributaries

- Re-establish, maintain, and improve self-sustaining populations of native salmonids
- Support a self-sustaining recreational salmonid fishery
- Reconnect tributary habitat by removing or improving blockages
- Protect, improve, and/or rehabilitate instream and riparian habitat conditions
- Control and prevent non-native fish species from being introduced, established, or spread



Tributary Protection, Mitigation, & Enhancement

- 13 Boundary Sub-watersheds
 - Most require some level of tributary measures
- Tributary measures:
 - Riparian area improvement
 - Channel enhancement
 - Culvert replacement
 - Wood placement
 - Non-native fish suppression and eradication



A Declining Native Species: Westslope Cutthroat Trout



- Westslope Cutthroat Trout (WCT) historically present in 99% of Pend Oreille River Basin streams
 - Currently present in only ~35%
- Petitioned for ESA listing (1998)
 - “Not warranted” at that time
- Many factors have/continue to contribute to decline
 - Habitat loss, fragmentation, degradation, and isolation
 - Non-native fish a significant contributor

Key Issue:

Non-Native Fish Species

- Non-native fish are a major limiting factor to native salmonids throughout the Pend Oreille River Basin
 - Competition for resources and habitat, predation risks, & hybridization
 - Extensive stocking history throughout the Basin
 - Pure Westslope Cutthroat Trout populations now limited to headwater areas, primarily above barriers
- Addressing non-native fish species is vital for WCT recovery



Importance of Westslope Cutthroat Trout Restoration

- Restoration of WCT in the Pend Oreille River Basin will:
 - Create more resilient and genetically diverse WCT populations
 - Expand the distribution and abundance of the species
 - Reduce the potential for listing or efforts to petition a listing of WCT under the Endangered Species Act (example Bull Trout)
- Projects that reduce the number of non-native fish in tributaries will significantly contribute to long-term WCT persistence



Options for Addressing Non-Native Fish

- Suppression (Electrofishing):
 - Used to selectively remove fish
 - Difficult to conduct in complex habitat
 - Most effective with low density non-native fish
 - High cost, long-term commitment & low to moderate probability of complete removal
- Eradication (Rotenone Treatment):
 - Naturally occurring substance
 - Used to remove all fish
 - Efficient and effective alternative to mechanical removals
 - Cost efficient & high probability of complete removal



Options for Addressing Non-Native Fish

- Electrofishing and Rotenone Treatments:
 - Individually appropriate for specific project areas
 - Both have been applied locally
 - Both are planned for use within the Boundary project area and the greater Pend Oreille River Basin
- This meeting is focused on planned suppression efforts



Suppression: Overview

- Streams selected for suppression generally meet these conditions:
 - Native species outnumber non-native species, occupying the same habitat
 - Genetically diverse native species
- Electrofishing allows for the collection and release of native fish
- Native fish able to utilize newly vacated habitat immediately
 - More resources, less competition
 - Expand distribution and abundance



Suppression: Electrofishing Techniques

- Backpack and bank-mounted/barge electrofishing
 - Non-lethal collection method
 - Uses low-level electrical current produced by battery or generator
 - Fully adjustable to conditions
 - Initially attracts fish
 - Fish stunned and netted
 - Fish recover quickly
- Suppression reaches can be isolated
 - 2-3 passes typically conducted
 - Increased capture efficiency

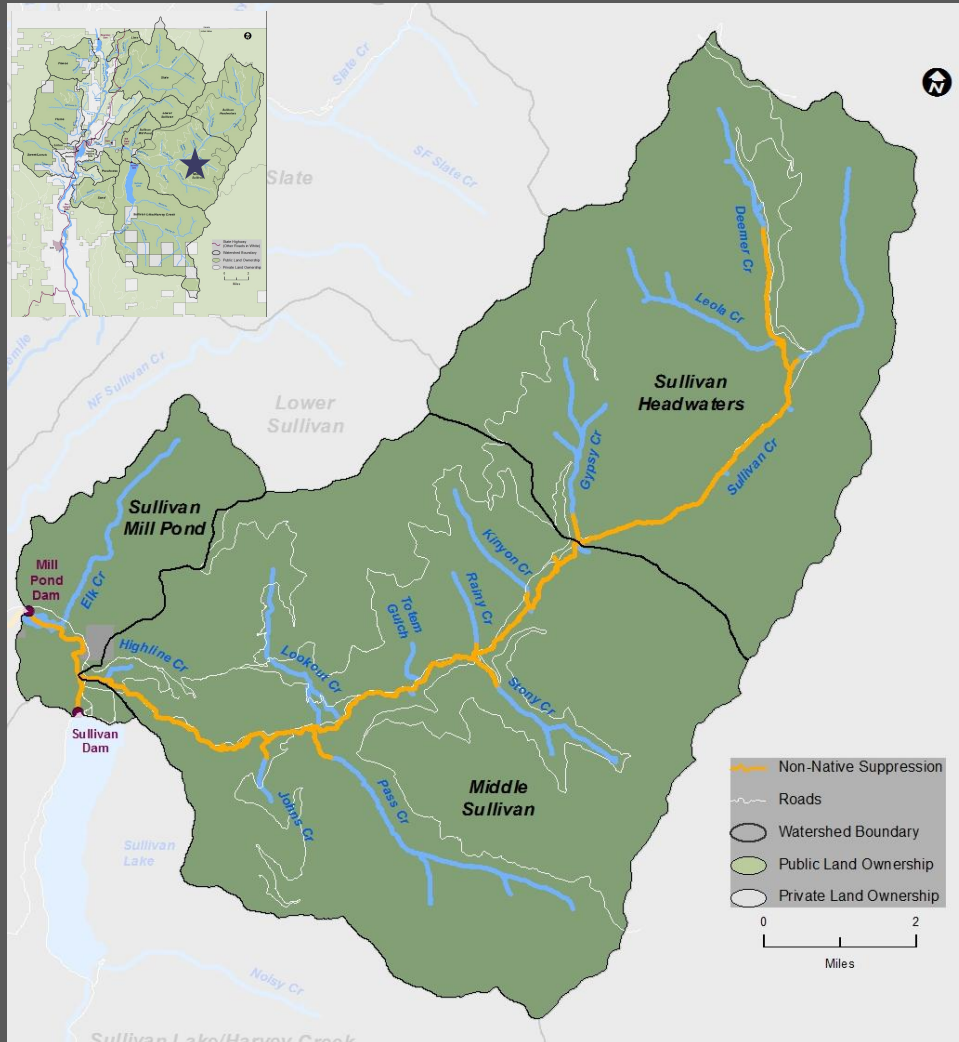


Suppression: Fish Collection & Handling

- All captured fish temporarily held in buckets with water
- Fish are processed after each pass:
 - Identified, weighed, and measured
 - Scanned for tags/marks
 - Native fish released and non-native fish removed

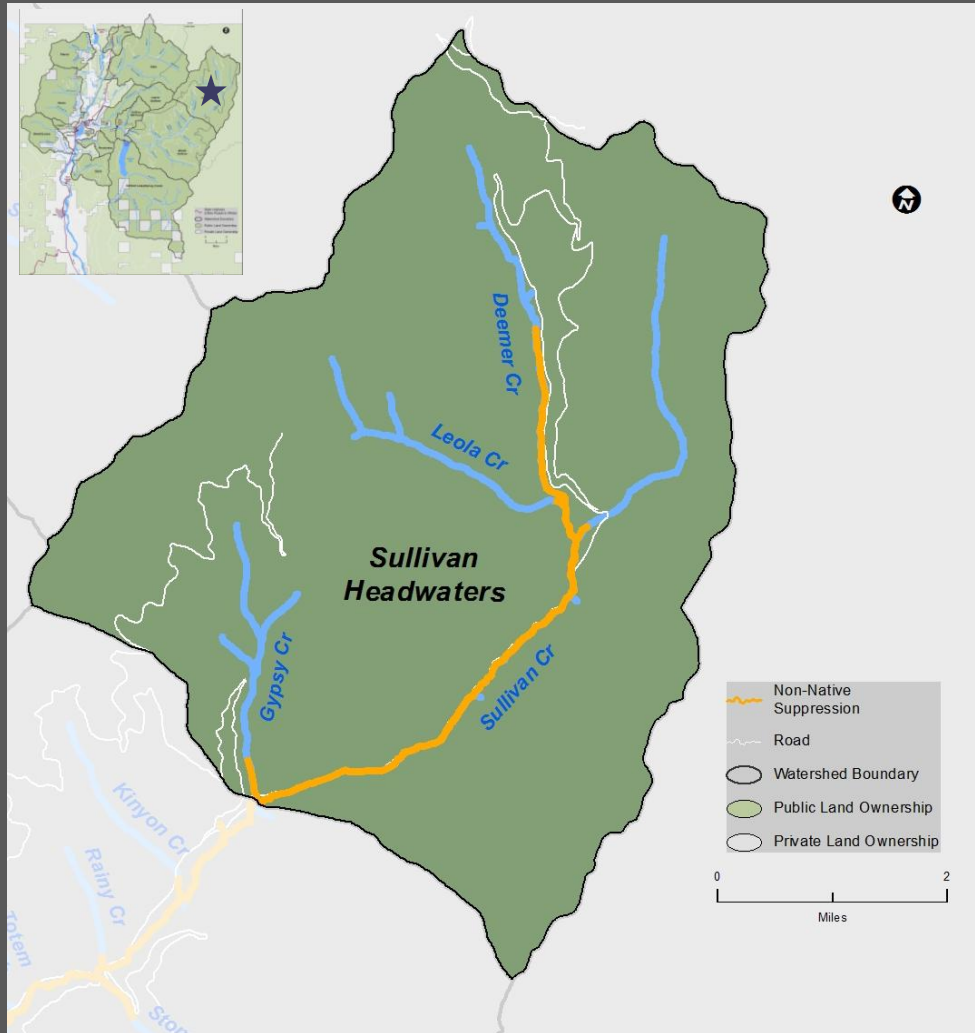


Sullivan Watershed



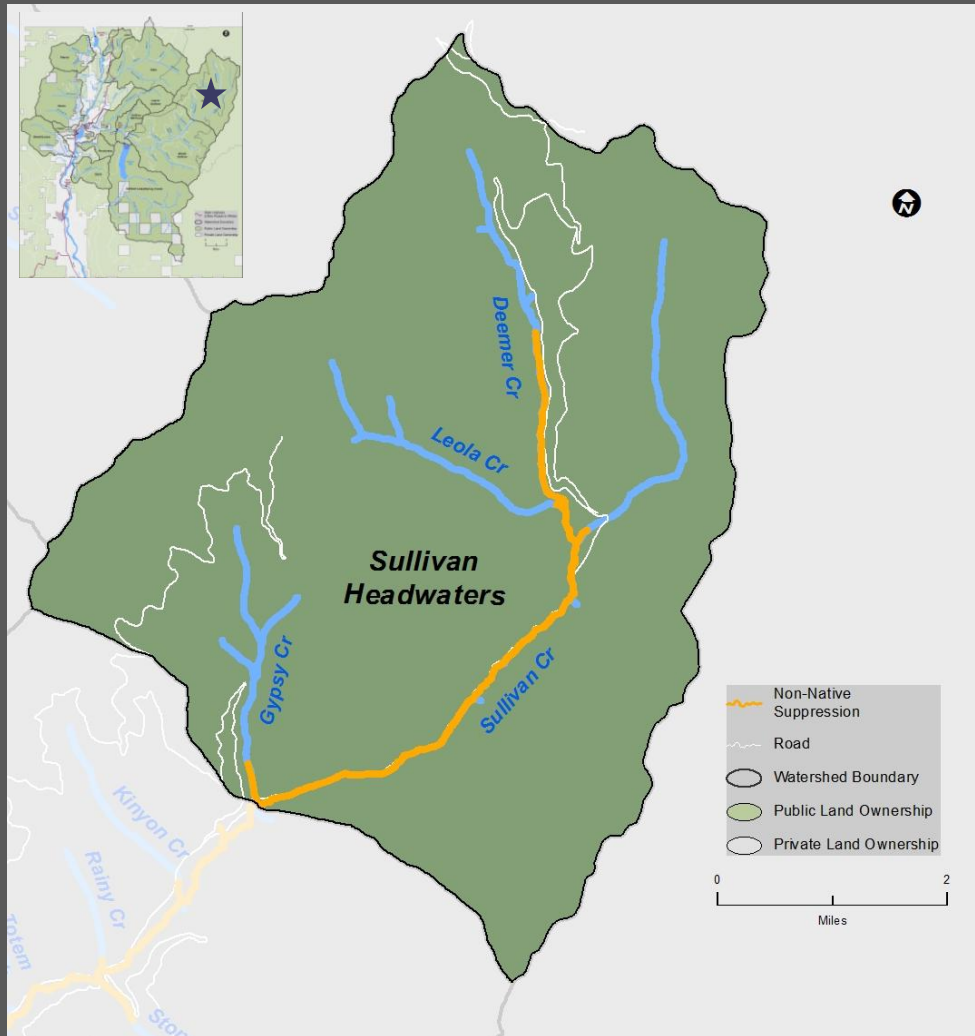
- Sullivan is the largest watershed in project area
 - 57% of drainage area
- Separated into three sub-watersheds:
 - Sullivan Headwaters
 - Middle Sullivan
 - Sullivan Mill Pond
- Each sub-watershed requires suppression
 - Sullivan Headwaters 1st

Sullivan Headwaters Sub-Watershed



- Sullivan Headwater tributaries:
 - Gypsy, Leola, & Deemer Creeks
 - 2.8 miles to be treated
 - Backpack electrofishing
- Mainstem Sullivan Creek:
 - Upstream of Gypsy Creek
 - 4.5 miles to be treated
 - Backpack and bank-mounted/barge electrofishing

Sullivan Headwaters Sub-Watershed



- **2015:** Implementation Plan
- **2015-2016:** Planning, work authorizations, outreach
- **2016:** Initiate suppression
 - July – October
 - 3 consecutive years
 - 10 monitoring reaches
- **2019-2020:** No suppression
- **2021:** Reinitiate suppression

Sullivan Watershed: Next Steps

- Continue Sullivan Headwaters sub-watershed suppression in 2017
- Begin Middle Sullivan sub-watershed suppression in 2017
- Begin Sullivan Mill Pond sub-watershed suppression in 2019
- Suppression will continue 6 out of every 10 years for duration of license
- Follow schedule for remaining suppression projects

Information & Outreach



- **Goal:** provide information and answer questions on suppression and eradication projects in Boundary tributaries
- Meeting series to continue late fall/winter 2016-spring 2017
 - Remaining meetings to focus on non-native fish rotenone treatments

Thank You



<http://www.fws.gov/mountain-prairie/fisheries/images/aquaticSpeciesSlideShow/westslopeCutthroat.jpg>



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